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10/595,674	08/07/2007	Nathaniel Sims	4742/006 US	4454

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EXAMINER	
NATNITHITHADHA, NAVIN	

ART UNIT	PAPER NUMBER
3735	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,674	SIMS ET AL.	
	Examiner	Art Unit	
	NAVIN NATNITHITHADHA	3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☒ Claim(s) *20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. According to the Amendment, filed 30 August 2010, the status of the claims is as follows:

Claims 1-3 and 7 are currently amended;

Claims 4-6 and 8-21 are as originally filed; and

Claims 22-96 are cancelled.

Response to Arguments

2. Applicant's arguments, see Remarks, pp. 6-10, filed 30 August 2010, with respect to the rejection of claims 1-7 and 13-19 under 35 U.S.C. 102(b) as being anticipated by New, Jr., et al, U.S. Patent Application Publication No. 2001/0047127 A1 ("New"), have been fully considered, but they are not persuasive.

As to Claim 1, Applicant contends, see Remarks, pp. 6-7, the following:

> Applicants respectfully submit that New's sensor device 10 does not show the claimed arched portion…

However, this argument is not persuasive. Based on broadest reasonable interpretation, New teaches the claimed subject matter. An "arch" is defined as "a curved structure, normally in the vertical plane, that spans an opening". Dictionary.com, "arch," in Dictionary.com Unabridged. Source location: Random House, Inc. http://dictionary.reference.com/browse/arch. Available: http://dictionary.reference.com. Accessed: November 05, 2010. As clearly shown in Figure 3 of New, the structure comprising "first sensor region 20", "third sensor region 26", "web 28", and "web 24" is curved or arched. In addition, the area of resistive

material, i.e. “bend sensor 42” which includes a resistive conductive material (see para. 40), is positioned on "web 28". The "web 28" is a portion of the unlabeled curved or arched structure. Even further, the “bend sensor 42" includes a "strip of conductive material such as ink which in turn has a series of highly conductive areas, for example of metal mounted on top of the conductive strip" (see para. 40). Lastly, New states that the “sensor 42 can be used to determine the extent of movement of a subject’s chest and hence to monitor respiration, for example…the resistance of the conductive material varies according to the extent of bending of the flexible substrate” (see para. 40). Thus, the rejection is maintained for the above reasons.

> **As to Claim 4**, Applicant contends, see Remarks, pp. 8-9, the following:
>
> Paragraph [0040] of New describes the physical structure of New's sensor device 10, which includes a bend sensor 42 having a flexible non-conductive substrate on which conductive materials can be formed.
> As a preliminary matter, Applicants respectfully submit that New does not teach or suggest the claimed film in paragraph [0040]. The Office reads New's web 28 as the claimed flexible strip. See page 3, item 3, line 14 of the Official Action. However, nothing in paragraph [0040] indicates that New's web 28 is a laminated film. Like New's conductive tracks 48, New's web 28 is a batch of conductive tracks formed by metalized ink. There is, however, no written support to conclude that New's web 28 can be provided in the form of a laminated film.
> Nor is there any teaching or suggestion of laminating New's web 28 onto a stiffer base layer using the claimed flexible adhesive. Applicants respectfully submit that paragraph [0040] is completely silent on the use of any adhesive (let alone a flexible adhesive). Paragraph [0040] speaks of the resistive sensor 42 and its proximity to the web 28, but otherwise provides no discussion on the structure of New's web 28, or how New's web 28 is formed on the sensor device 10.
> For at least the foregoing reasons, Applicants respectfully submit that New does not anticipate claim 4.

However, this argument is not persuasive. Based on broadest reasonable interpretation, New teaches the claimed subject matter. The New reference

incorporated by reference a "co-pending patent application entitled "Physiological Sensor Device", U.S. Patent Application Ser. No. (Attorney Reference No. NEXT-0005)", which is Haines, U.S. Patent No. 6,385,473 B1 ("Haines"). Haines teaches the claimed subject matter as follows: a flexible strip 28 that is a film laminated to the stiffer base layer ("intermediate release liner") 72 using a flexible adhesive ("adhesive layer") 62 (see col. 7, l. 58, to col. 8, l. 13). For this reason, the rejection is maintained.

As to Claim 6, Applicant contends, see Remarks, p. 9, the following:

> Claim 6 is also allowable for the following additional reasons. Claim 6 recites an area of resistive material that has a rectangular shape with an upper surface area less than half a square centimeter.
>
> As a preliminary matter, the Office has not identified where these features are taught or suggested in New, rendering the rejection difficult to address. *See* page 4, lines 12-14 of the Official Action. Nevertheless, it is respectfully submitted that nowhere is the size of the shape of the resistive sensor 42 disclosed in New. While New discloses the impedance range of the resistive sensor 42 *(see* [0053]), there is no teaching or suggestion of the size of the shape of the resistor sensor 42 that yields the impedance range.
>
> For at least the foregoing reasons, Applicants respectfully submit that New does not anticipate claim 6.

However, this argument is not persuasive. Based on broadest reasonable interpretation, New teaches the claimed subject matter. New clearly illustrates the rectangular shape of "bend sensor 42" in Figure 3. Thus, the rejection is maintained for the above reason.

3. Applicant's arguments, see Remarks, pp. 8-10, filed 30 August 2010, with respect to the rejection of claims 8-12, 20, and 21 under 35 U.S.C. 102(b) as being anticipated by New, Jr., et al, U.S. Patent Application Publication No. 2001/0047127 A1 ("New"), have been fully considered, and are persuasive. Therefore, the rejection has

been withdrawn. However, upon further consideration, a new ground(s) of rejection is made below.

As to Claim 8, Applicant contends, see Remarks, p. 9, the following:

> Claim 8 is also allowable for the following additional reasons. Claim 8 recites a carrier including a central housing for electronics, two extensions from the central housing carrying external sensors, and a harness.
>
> In the statement of rejection, the Office alleges New provides "a central housing 26 for the electronics, two extensions 20 and 22..., and a harness ('attached to the chest of a human object or patient S')". See page 4, lines 17 22 of the Official Action. Applicants respectfully submit that New's component 26 is a sensor region imprinted on the sensor device 10, not a housing. Applicants respectfully submit that New's imprinted sensor region 26 does not "house" any electronics. Also, New's components 20 and 22 refer to other additional imprinted sensor regions imprinted on the sensor device 10. There is no teaching or suggestion that New's sensor regions 20 and 22 carry any external sensors. Rather, New's sensor regions 20 and 22 are the actual sensors of the sensor device 10. There is no teaching or suggestion in New of a carrier having two extensions for carrying these sensor regions 20 and 22 or the sensor device 10.
>
> Further, while New describes the attachment of the sensor device 10 to the chest of a human subject, nothing in New teaches or suggests the method of attachment. Nor is there any disclosure of the use of a harness to do so. As shown in FIG. 1, the sensor device 10 is attached to the human without any harness. Absent any showing to the contrary, Applicants respectfully submit that New does not anticipate claim 8.

Applicant's argument is persuasive in regard to the claim limitation “a harness” in claim 8.

However, Applicant’s argument in regard to the claim limitation “a central housing for the electronics, two extensions from the central housing carrying external sensors” is not persuasive. Based on broadest reasonable interpretation, New teaches the claimed subject matter. A “housing” is defined as “a part designed to shelter, cover, contain, or support a component, such as a bearing, or a mechanism, such as a pump or wheel“.

Dictionary.com, "housing," in *Collins English Dictionary - Complete & Unabridged 10th Edition*. Source location: HarperCollins Publishers. http://dictionary.reference.com/browse/housing. Available: http://dictionary.reference.com. Accessed: November 05, 2010. As shown in Figure 3 of New, the electronics, i.e. "printed circuit board 46", is contained in or supported by the "third region 26" or by the entire structure of "device 10". The use of "external" is an arbitrary and relative term. Here, a reasonable interpretation of the claim limitation is that the regions 20 and 22 extend from the structure including "region 26" and "web 28" and is external from that structure. Thus, the sensors 30, 32, 34, 36, and 38 are all external from the structure including "region 26" and "web 28".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended independent claim 1 includes the limitation "the area of the resistive material being formed using conductive ink on an arched portion of the flexible strip for setting a neutral resistance from which the electrical resistance is measured as the flexible strip is flexed". It is not clear how "the area of the resistive material being formed using conductive ink on an arched portion of the flexible strip" is able to "[set] a

neutral resistance from which the electrical resistance is measured as the flexible strip is flexed".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-7 and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by New, Jr., et al, U.S. Patent Application Publication No. 2001/0047127 A1 ("New").

As to Claim 1, New teaches the following:

An apparatus for transmitting information on the physical status of a subject (see Abstract and figs. 1-4) comprising:

a carrier 10 for sensors ("array of sensors" or "physiological bend sensor") 10a/42 arranged to be worn by the subject for providing electrical signals representative of physical parameters of the subject (see para. 39), and

electronics ("printed circuit board", which includes "application specific integrated circuit (ASIC)", see para. 36) 46 to receive the electrical signals from the sensors 10a/42 (see para. 41), and to process the signals at the location of the subject (see para. 36),

the sensors 42 including one or more respiration motion sensors (see para. 40) comprising

a flexible strip ("web", see para. 40) 28 having a first conductive lead (not labeled, "strip of conductive material", see para. 40) connecting to an area of resistive material whose electrical resistance varies as the strip 28 is flexed (see para. 40 and 53-54), the area of the resistive material being formed using conductive ink ("strip of conductive material such as ink", see para. 40) on an arched portion (see arched portion that includes elements 28, 42, and 48 in fig. 3) of the flexible strip 28 for setting a neutral resistance (non-bend position) from which the electrical resistance is measured as the flexible strip 28 is flexed (bend position based on movement of the chest, see para. 40 and 53).

As to Claims 2 and 3, New teaches the following:

wherein the flexible strip 28 is a film ("ink", see para. 40) laminated to a stiffer base layer ("web") comprising the arched portion (see fig. 3), and wherein the area of resistive material is located on the arched portion (see fig. 3), wherein the film and the stiffer base layer are formed so that a portion of the flexible strip containing the resistive material is shaped into an arch forming the arched portion (see fig. 3).

As to Claim 4, the New reference incorporated by reference a "co—ending patent application entitled "Physiological Sensor Device", U.S. Patent Application Ser. No. (Attorney Reference No. NEXT-0005)", which is Haines, U.S. Patent No. 6,385,473 B1 ("Haines"). Haines teaches the claimed subject matter as follows: a flexible strip 28 that is a film laminated to the stiffer base layer ("intermediate release liner") 72 using a flexible adhesive ("adhesive layer") 62 (see col. 7, l. 58, to col. 8, l. 13).

As to Claim 5, New teaches the following:

wherein the area of resistive material is less than half a square centimeter (see fig. 3).

As to Claim 6, New teaches the following:

wherein the area of resistive material has a rectangular shape with an upper surface area less than half a square centimeter.

As to Claim 7, New teaches the following:

wherein the strip 28 has ends that are substantially flat (see fig. 3).

As to Claims 13 and 14, New teaches the following:

electrical contacts ("conductive tracks") 48 on the flexible strip 28 for connection with the electronics 46 and a second conductive lead on the flexible strip 28 joined to the first conductive lead at the end of the sensor 42 opposite the contacts (see para. 41 and fig. 3), electrical contacts 48 and having improved electromagnet interference rejection comprising a third conductive lead on the flexible strip 28, said second and third conductive leads located on opposite sides of the first conductive lead, and the three conductive leads joined at an end opposite the contacts 48 (see fig. 3).

As to Claims 15 and 16, New teaches the following:

a cover sheet ("metal") overlaying the resistive material or adhered to the resistive material (see para. 40).

As to Claim 17, New teaches the following:

a voltage divider circuit ("potential divider") having two resistors in which one of the resistors comprises the area of resistive material (see para. 53-54).

As to Claim 18, New teaches the following:

a decoupling circuit 59 so that an output signal from the respiration motion sensor 42 is proportional to changes in resistance of the area of resistive material (see para. 41).

As to Claim 19, New teaches the following:

wherein the resistance of the area of resistive material increases as the arched portion of the strip is flexed convexly (see para. 40).

6. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over New, as applied to claim 1 above, and further in view of Bornn et al, U.S. Patent No. 5,353,793 A ("Bornn").

As to Claims 8-12, New does not teach the following:

a harness;

wherein the harness is configured to position the housing approximately over the subject's solar plexus;

wherein the harness has an elastic portion and comprises a first strap that passes around the subject's back and a second strap that passes over the left shoulder;

wherein the two extensions extend from the sides of the housing and are connected to the first strap of the harness; and

wherein the straps of the harness have adjustable lengths to allow fitting to different users.

However, Bornn teaches the following:

a harness 10;

wherein the harness 10 is configured to position the housing approximately over the subject's solar plexus (see “chest band 14” in fig. 1A);

wherein the harness 10 has an elastic portion and comprises a first strap (“chest band”) 14 that passes around the subject's back and a second strap (“shoulder band”) 12 that passes over the left shoulder (see fig. 1A and col. 5, ll. 4-29, and col. 6, ll. 42-61);

wherein the two extensions extend from the sides of the housing and are connected to the first strap 14 of the harness 10; and

wherein the straps 12 and 14 of the harness 10 have adjustable lengths to allow fitting to different users (see col. 6, ll. 25-42).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify New’s apparatus to be included in a harness as taught by Bornn in order to provide a more comfortable fit and have a reliable attachment to monitor patients who are ambulatory or sleeping (see Bornn, col. 1, ll. 6-12).

Allowable Subject Matter

7. Claims 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

As to Claims 20 and 21, the prior art of record does not teach the apparatus of claim 1 combined with the following limitations: wherein the respiration sensor comprises a second flexible strip having a second area of resistive material, wherein the two flexible strips are back-to-back on a single base layer.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The other patents cited in the PTO-892 teach subject matter related to the Applicant's claims. The Examiner suggests reviewing these patents before responding to the present Office Action.

10. Applicant's amendment, filed on 30 August 2010, necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAVIN NATNITHITHADHA whose telephone number is (571)272-4732. The examiner can normally be reached on Monday-Friday, 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor, II can be reached on (571) 272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles A. Marmor, II/
Supervisory Patent Examiner
Art Unit 3735

/N. N./
Patent Examiner, Art Unit 3735
11/05/2010